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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

JARRETT, SCOTT L

ART UNIT	PAPER NUMBER
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3623

DATE MAILED: 02/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/681,397

Applicant(s)

KITTS, BRENDAN J.

Examiner

Scott L. Jarrett

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2001.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-16 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 29 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2/12/02, 1/27/03, 2/20/04, 9/20/04, 10/24/04
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. Claims 1-8 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The basis of this rejection is set forth in a two-prong test of:

- (1) whether the invention is within the technological arts; and
- (2) whether the invention produces a useful, concrete, and tangible result.

For a claimed invention to be statutory, the claimed invention must be within the technological arts. Mere ideas in the abstract (i.e., abstract idea, law of nature, natural phenomena) that do not apply, involve, use, or advance the technological arts fail to promote the "progress of science and the useful arts" (i.e., the physical sciences as opposed to social sciences, for example) and therefore are found to be non-statutory subject matter. For a process claim to pass muster, the recited process must somehow apply, involve, use, or advance the technological arts.

Regarding Claims 1-8, claims 1-8 only recite an abstract idea. The recited method for predicting a behavior of a first customer of a vendor at a future date does not apply, involve, or use the technological arts since all of the recited steps can be performed in the mind of the user or by use of a pencil and paper. The claimed invention, as a whole, is not within the technological art as explained above claims 1-8 are deemed to be directed to non-statutory subject matter.

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As to technological arts recited in the preamble, mere recitation in the preamble (i.e., intended or field of use) or mere implication of employing a machine or article of manufacture to perform some or all of the recited steps does not confer statutory subject matter to an otherwise abstract idea unless there is positive recitation in the claim as a whole to breathe life and meaning into the preamble. In the present case, none of the recited steps are directed to anything in the technological arts as explained above. Looking at the claims as a whole, nothing in the body of the claims recites any structure or functionality to suggest that a computer performs the recited steps.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-7 and 9-15 are rejected under 35 U.S.C. 102 (b) as being clearly anticipated by Cabena, Pete et al. Intelligent Miner for Data Applications Guide (March, 1999).

Regarding Claims 1 and 9 Cabena et al. teach a computer-implemented method of prediction a behavior of a plurality of customers at a plurality of future dates comprising (Section 1.4: Data Mining Applications, Pages 8-9; Section 1.5: Data Mining Techniques, Pages 9-13; Chapter 3: Case Study Framework, Pages 27-32; Chapters 4-7, Pages 33-132):

- accessing a plurality of data (information) regarding a plurality of customers;
- generating time series (transactional, time based, over time, etc.) information for a plurality of customers;
- training a model to obtain weights (score, value, etc.), wherein training is performed using at least some of the time series information (Section 6.3.3: Data Sampling for Training and Test, Pages 93-95; Section 6.3.5: Train and Test, Page 95; Pages 10,12, 24, 99, 101; Figures 60, 64); and

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- predicting a behavior of a plurality of customers at a plurality of future dates, wherein predicting is performed using the weights in the model and at a frequency greater than monthly (Paragraph 1, Page 73).

Regarding Claims 2 and 10 Cabena et al. teach that the predictive modeling system further comprises the ability to select a forecast horizon (Page 117) and a time window of transactions (of six months or less, Pages 72-73 and 91).

Regarding Claims 3 and 11 Cabena et al. teach that the predictive modeling system further comprises the ability to access data regarding a customer and generating time series information in substantially real-time (Continuous Interactive Marketing (CIM), continuous marketing; Pages 28-29).

Regarding Claims 4 and 12 Cabena et al. teach that the predictive modeling system includes modeling the likelihood of retention (Chapter 3.1: Customer Relationship Management, Pages 27-28; Chapter 7: Attrition Model to Improve Customer Retention, Pages 111-132; Figure 4).

Regarding Claims 5 and 13 Cabena et al. teach that the predictive modeling system includes modeling future revenue (sales, purchases, etc.; Pages 34, 36, 37, 39, 64; Table 1, Page 64).

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Regarding Claims 6-7 and 14-15 Cabena et al. teach that the predictive modeling system includes accessing a plurality of information regarding a plurality of customers as well the preparing of data including but not limited to the treatment of outliers (Page 16; Section 4.3.2: Data Preparation, Pages 38-44; Section 6.3.2: Data Preparation, Page 92). More specifically Cabena et al. teach that the system iterates through the steps of data selection, data preparation, data mining, and results analysis (Figure 7, Page 14) thereby performing the data preparation portion of the process multiple times, before and after training has occurred.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 8 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cabena, Pete et al., Intelligent Miner for Data Applications Guide (March, 1999) as applied to Claims 1-7 and 9-15 above.

Regarding Claims 8 and 16 Cabena et al. teach a system for predicting the future behavior of customers wherein a plurality of predictive modeling, data mining and statistical tools, techniques, algorithms, approximators (function approximators, estimators), and the like are utilized including but not limited to polynomial regression,

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neural networks and decision trees (Section 1.5: Data Mining Techniques, Pages 9-13; Page 24). Cabena et al. further teach that there is no single or best data mining technique (Paragraphs 5-6, Page 9).

Cabena et al. does not expressly teach the use of splines.

Official notice is taken that the use of splines for statistical analysis or predictive modeling or function approximation or model training is old and very well known in the art. Accordingly, it would have been obvious to one skilled in the art at the time of the invention that the predictive modeling system as taught by Cabena et al. would have benefited from including (utilizing) a plurality of data mining models, techniques, tools, etc. including but not limited to splines as a means enabling users to use the technique most applicable to their situation (use).

Examiner Note

Examiner has cited particular sections, pages, and paragraphs or figures in the references applied to the claims for the convenience of the applicant. Although the specific citations are representative of the teachings in the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant, in preparing the responses, to fully consider the references in their entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the examiner.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Basch et al., U.S. Patent No. 6,119,103, teach a method and system for predicting the behavior of a customer at a future date comprising accessing data regarding the vendor's customers, generating time series information (transactional data), training a predictive model using the time series information and predicting the behavior of the customer using the predictive model. Basch et al. further teach that the prediction frequency can be greater than a month and that the system uses a plurality of statistical models/analysis including but not limited to decision trees and regression analysis.

- Honarvar, Laurence, U.S. Patent No. 6,321,206, teaches a method and system for predicting the behavior of a customer at a future date comprising accessing data regarding the vendor's customers, generating time series information and predicting the behavior, one such behavior being the retention (attrition, movement) of the customer, using the predictive model. Honarvar further teaches that the system uses a plurality of statistical models/analysis including but not limited to decision trees.

- Lazarus et al., U.S. Patent No. 6,430,539, teach a method and system for predicting the behavior of a customer at a future date comprising accessing data regarding the vendor's customers, generating time series information (transactional data), training a predictive model using the time series information and predicting the behavior of the customer, one such behavior being the retention (attrition, movement) of the customer, using the predictive model. Lazarus et al., further teach that the prediction frequency can be greater than a month, daily or substantially in real-time and that the system utilizes a plurality of multivariate statistical models/analysis.

- Galperin et al., U.S. Patent No. 6,640,215, teach a system for predicting the future behavior of a customer at a future date (predictive modeling). Galperin et al. further teach that the system includes the training of the model and selection of model weights based on the customer data. Galperin et al. further teaches that the system is model independent and can use any of a plurality of commonly available modeling approaches including but not limited to neural network, logistic regression, radial basis function, CHAID, genetic algorithms, etc.

- Blume et al., U.S. Patent No. 6,839,682, teaches a method and system for predicting the behavior of a customer at a future date comprising accessing data regarding the vendor's customers, generating time series information (transactional data), training a predictive model using the time series information and predicting the behavior of the customer, one such behavior being the retention (attrition, movement) of the customer, using the predictive model. Blume et al., further teach that the prediction frequency can be greater than a month, daily or substantially in real-time and that the system utilizes a plurality of multivariate statistical models/analysis.

- Fishman et al., U.S. Patent Publication No. 2001/0037321, teaches a method for building predictive models on transactional data. Fishman et al. further teach that the method involves training of any of a plurality of predictive statistical models (e.g. logistic regression, neural network, radial basis function and the like) and can be utilized in substantially real-time.

- DataSage Releases netCustomer, the 1st Individualization Solution for E-Commerce, teaches a commercially available system (1999) and method for predicting the behavior of customers across time, activities (transactions, clicks, etc.) and channels. Further the article teaches that this customer analytics system includes information regarding the retention of customers.

- Retail Data Mining – Executive Overview, teaches a commercially available system (1999) for predicting the behavior of a customer utilizing well-known data mining techniques in near real-time. The article further teaches that the system utilizes time series information (transaction data) to forecast future inventory for retailers and that the

foundation of the system is the result of research at MIT Artificial Intelligence Lab known as Highly Interconnected Digital Recognition Algorithm (HIDRA, CirrusNet).

- Gallant, Steve et al., Successful Customer Relationship Management in Financial Applications, teach a system for predicting the behavior of customers at a future date, accessing data regarding a vendor's customers, generating time series information and the training of the predictive model using the customer information. Further Gallant et al. teach common uses for knowledge discovery (data mining) include predictive and attrition modeling as well as customer retention and loyalty programs. Gallant et al. further teach the use of the Cross Industry Standard Process (CRISP) model for data mining and that a plurality of predictive models can be used including but not limited to neural networks, decision trees, Bayes nets, etc.

- Vignette Corporation to Acquire DataSage Inc., teaches the addition of real-time customer analytics to Vignette's system through its acquisition of DataSage.

- Chapman, Pete et al., CRISP-DM 1.0, teaches an industry standard method for data mining including the steps of verifying the quality of the data collected (and to be mined) as well as the selection of a modeling technique. Chapman et al. further teach a plurality of common data mining problem types including classification, e.g. will a customer stay or leave, and prediction, assign a value to a target attribute. Chapman et al. further teach that there exists a plurality of appropriate techniques for prediction and classification problem types including but not limited to decision tree learning, neural nets, K Nearest Neighbor, regression analysis, regression trees and the like.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott L. Jarrett whose telephone number is (703) 306-5679. The examiner can normally be reached on Monday-Friday, 8:00AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hafiz Tariq can be reached on (703) 305-9643. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SJ
2/18/2005



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